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| 09/815,942 | 03/23/2001 | Stephen Blott | Blott 9-7-10 | 8249 |

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EXAMINER

SIDDIQI, MOHAMMAD A

ART UNIT PAPER NUMBER

2154

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,942

Applicant(s)

BLOTT ET AL.

Examiner

Mohammad A Siddiqi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/13/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1- 20 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahler et al. (6,675,218) (hereinafter Mahler) in view of Garcia et al. (6,145,061) (hereinafter Garcia).

4. As per claim 1, Mahler discloses an application programming interface (API) for network applications capable of processing packets having source and destination node address different from a node where the application runs, said API comprising:

first and second data structures (file structure and packet queue, col 7, lines 14-25) associated with a network interface (fig 1) in communication with a network (col 2, lines 53-64), said first and second data structures being mapped (mapping refers to kernel space and user space, fig 1, col 7, lines 14-25) to an operating system and a network application (col 6, lines 54-63), said network interface (fig 1), operating system (col 6, line 61), and network application residing at a node (col 2, lines 31-36) capable of processing packets having source and destination node address (col 2, lines 31-36) different from said node (incoming packet, col 13, lines 14-15) where the application (col 1, lines 64-67 and col 2, lines 1-6), wherein:

packets (col 7, line 20) to be passed from the operating system (col 6, lines 60-62) to the network application are stored in a buffer (memory, col 7, line 15) and referenced via respective pointers (col 7, line 20) within said first data structure (col 7, lines 7-25), said first data structure pointers being inserted (col 7, lines 21-25) into said first data structure by said operating system (kernel code, col 7, lines 14-15) prior to network layer

processing (col 7, lines 15-25), said first data structure pointers being removed by said network application (col 7, lines 25-30); and

packets (col 7, line 20) to be processed as received packets by said network layer of said operating system (col 6, lines 60-62) are stored in a buffer (memory, col 7, line 15) and referenced via respective pointers (col 9, line 65) within said second data structure (packet queue, col 7, line 20), said second data structure pointers being inserted into said second data structure by said network application (col 7, lines 21-25), said second data structure pointers being removed by said operating system (col 7, lines 21-25).

Mahler does not explicitly disclose insertion and removal of said first data structure pointers being asynchronous with respect to each other. However, the insertion and removal of pointer in link list data structure is well known in the art. Garcia discloses insertion and removal of said first data structure pointers being asynchronous with respect to each other (col 1, lines 55-60 and col 3, lines 14-35). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Mahler with Garcia because Garcia's method of management of a circular queue for asynchronous access would provide Mahler's asynchronous insertion and deletion of data elements in the queue.

5. As per claim 17, the claim is rejected for the same reasons as claim 1, above.

6. As per claim 19, the claim is rejected for the same reasons as claim 1, above.

7. As per claim 2, Mahler discloses a primitive (col 8, lines 18-28) creating said first and a second data structures if said first and a second data structures are not available (col 7, lines 14-21).

8. As per claims 3,18, and 20 Mahler disclose a primitive for unmapping said first and a second data structures from the network application (kfree_skb, col 10, lines 36-41), said unmapping primitive operating to destroy said first and a second data structures if said data structures are mapped to no other network application (kfree_skb, col 10, lines 36-41).

9. As per claim 4, Mahler discloses first and a second data structures not being associated with the network interface (fig 1, col 7, lines 14-25), the operating system automatically passes the packets received from the network by the network interface to the operating system's network layer (kernel space to user space and vice versa, col 7, lines 14-29), for

processing (col 7, lines 14-25), and automatically passes the packets output by the operating system's network layer to the network interface, for sending to the network (col 7, lines 14-29, col 13, lines 51-55, outgoing direction).

10. As per claim 5, Mahler discloses the operating system's network layer implements the Internet Protocol (IP) (figure 1, col 4, lines 35-39).

11. AS per claim 6, Mahler discloses non-network packets (col 7, line 20) to be passed from the operating system (col 6, lines 60-62) to the network application are stored in a buffer (memory, col 7, line 15) and referenced via respective pointers (col 7, line 20) within said first data structure (col 7, lines 7-25), said first data structure pointers being inserted into said first data structure by said operating system, said first data structure pointers being removed by said network application; and

non-network packets (col 7, line 20) to be passed from said network application to said operating system are stored in a buffer and referenced via respective pointers within said second data structure (col 7, lines 7-25), said second data structure pointers being inserted into said second data structure by said network application (col 7, lines 21-25), said second data

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structure pointers being removed by said operating system (col 7, lines 21-25).

12. As per claim 7, Mahler discloses the operating system maintains in said first data structure at least a predefined number of pointers (col 6, lines 63-67).

13. As per claim 8, Mahler fails to disclose a primitive to destroy said first and second data structures (col 10, lines 36-41).

14. As per claim 9, Mahler discloses other network applications do not access a buffer (blocked, col 10, lines 13-19, col 6, lines 54-57) from the time said network application removes a pointer to said buffer from said first data structure and inserts a pointer to said buffer into said second data structure (col 7, lines 21-25).

15. As per claim 10, Mahler discloses each buffer contains an identifier (col 10, lines 10-12) of a network application having exclusive use of the buffer (col 9, lines 25-33).

16. As per claim 11, Mahler discloses upon termination of a network application, the operating system automatically reclaims buffers that are in the application's exclusive use (release, col 8, lines 1-5).

17. As per claim 12, Mahler discloses first or second data structure is a queue (col 7, lines 19-21). Mahler fails to disclose circular queue. However, Garcia discloses circular queue (col 1, lines 55-60). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Mahler with Garcia because Garcia's method of management of a circular queue would provide Mahler's asynchronous insertion and deletion of data elements in the queue.

18. As per claim 13, Mahler fails to disclose a primitive for placing the network application in a quiescent state (26, fig 4) until the operating system inserts a pointer into said first data structure (34, fig 4).

19. As per claim 14, Mahler fails to disclose a primitive for placing the network application in a quiescent state until the operating system removes a pointer from said second data structure (36, fig 4).

20. As per claim 15, Mahler discloses wherein the node where the network application runs is configured as one of a host, a bridge, a switch and a router (figure 1).

21. As per claim 16, the claim is rejected for the same reasons as claim 9, above.

Conclusion

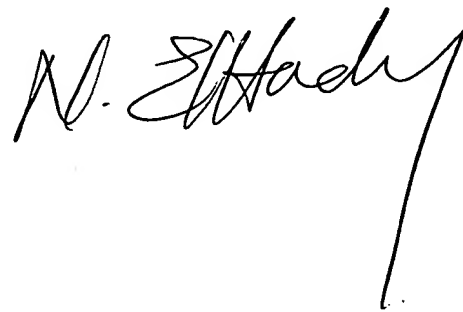
22. Applicant's arguments with respect to claim 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad A Siddiqi whose telephone number is (703) 305-0353. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on (703)305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAS

A handwritten signature in black ink, appearing to read "N. El Hadj", with a long vertical stroke extending downwards from the end of the signature.